ABSTRACT

Systems and methods are disclosed for implementing and using data structures comprised of a hierarchy of queues or linked list data structures. A queue or linked list typically comprises a distributor, a plurality of sub-queues or sub-linked lists, and a receiver. The distributor distributes a plurality of items to be added to the queue or linked list to the plurality of sub-queues or sub-linked lists in an order, and the receiver receives the items from these elements in the same order. Entries for the queues and/or linked lists may be stored in a common memory. Stages of selectors may be used to select a current queue or linked list and a particular sub-queue or linked list. The number of queues/linked lists and sub-queues/sub-linked lists is unbounded and can be sized according to the needs of the system, such as to overcome a memory access speed limitation.